

vibrates in response to a magnetic flux produced by said coil; and

*B1
C1c1d*
(e) a vibrator made of magnetic material and supporting said permanent magnet.

2. (Amended) The linear motor as defined in Claim 1, wherein said permanent magnet is fixed to a side of said vibrator facing said coil.

3. (Amended) A linear motor comprising:

(a) a tubular outer yoke;
(b) a tubular inner yoke disposed in said outer yoke;
(c) a plurality of coils disposed to one of said outer yoke and said inner yoke;
(d) a plurality of permanent magnets located between said outer yoke and said inner yoke and that vibrates in response to a magnetic flux produced by said coil; and
(e) a vibrator made of magnetic material supporting said permanent magnet,

wherein said permanent magnets are fixed to a side of said vibrator facing said coil and are arranged along a vibrating direction of said vibrator, with adjacent permanent magnets thereof having unlike polarities, and

wherein said vibrator has a slit between said adjacent magnets.--

B2
--12. (Amended) A linear motor comprising:

(a) a tubular outer yoke;
(b) a tubular inner yoke disposed in said outer yoke;
(c) a coil provided to one of said outer yoke and said inner yoke;
(d) a permanent magnet located between said outer yoke and said inner yoke and that vibrates in response to a magnetic flux produced by said coil; and
(e) a vibrator made of magnetic material and supporting said permanent magnet, wherein at least one slit is provided on a side of said vibrator.

13. (Amended) The linear motor as defined in Claim 12, wherein the slit is long and

narrow and extends along a vibrating direction of said vibrator.--

B3
--15. (Amended) A compressor including a linear motor, said motor comprising:

- (a) a tubular outer yoke;
- (b) a tubular inner yoke disposed in said outer yoke;
- (c) a coil provided to one of said outer yoke and said inner yoke;
- (d) a permanent magnet located between said outer yoke and said inner yoke and that vibrates in response to a magnetic flux produced by said coil; and
- (e) a vibrator made of magnetic material and supporting said permanent magnet.

16. (Amended) A linear motor comprising:

- (a) a tubular outer yoke;
- (b) a tubular inner yoke disposed in said outer yoke;
- (c) a coil provided to one of said outer yoke and said inner yoke;
- (d) a permanent magnet located between said outer yoke and said inner yoke and that vibrates in response to a magnetic flux produced by said coil; and
- (e) a vibrator supporting said permanent magnet, said vibrator being made of magnetic material,

wherein said permanent magnet is fixed to said vibrator on a side of one of said outer yoke and said inner yoke that includes said coil.

17. (Amended) A compressor including a linear motor, said motor comprising:

- (a) a tubular outer yoke;
- (b) a tubular inner yoke disposed in said outer yoke;
- (c) a coil provided to one of said outer yoke and said inner yoke;
- (d) a permanent magnet located between said outer yoke and said inner yoke and that vibrates in response to a magnetic flux produced by said coil; and
- (e) a vibrator supporting said permanent magnet, said vibrator being made of magnetic

material,

B3
wherein said permanent magnet is fixed to said vibrator on a side of one of said outer yoke and said inner yoke that includes said coil.--

--19. (Amended) A linear motor comprising:

- (a) a tubular outer yoke;
- (b) a tubular inner yoke disposed in said outer yoke;
- (c) a coil provided to one of said outer yoke and said inner yoke;
- (d) a permanent magnet located between said outer yoke and said inner yoke and that vibrates in response to a magnetic flux produced by said coil; and
- (e) a vibrator supporting said permanent magnet,

wherein at least one of said outer yoke and said inner yoke is a compression-formed body made of metallic magnetic particles.

20. (Amended) The linear motor as defined in Claim 19, wherein at least one of said inner and outer yokes is a compressed and molded body made of metallic magnetic particles and electrically insulating resin.

21. (Amended) The linear motor as defined in Claim 19, wherein at least one of said inner and outer yokes is a compression-formed body made of metallic magnetic particles, and has an electrically insulating layer on a surface thereof.--

22. (Amended) The linear motor as defined in Claim 21, wherein said electrically insulating layer is made of inorganic material.

23. (Amended) A linear motor comprising:

a yoke section comprising a compression-formed and molded body made of metallic magnetic particles; and

B3
CMCLD.

a mover vibrating along said yoke section,
wherein said yoke section formed of a compression-formed body is divided along a circumferential direction.

24. (Amended) The linear motor as defined in Claim 23, further including an insulating layer on a surface of said yoke section.--

--26. (Amended) A linear motor comprising:

- (a) a tubular outer yoke;
- (b) a tubular inner yoke disposed in said outer yoke;
- (c) a coil provided to one of said outer yoke and said inner yoke;
- (d) a permanent magnet located between said outer yoke and said inner yoke and that vibrates in response to a magnetic flux produced by said coil; and
- (e) a vibrator supporting said permanent magnet,
wherein at least one of said outer yoke and said inner yoke is formed by arranging a plurality of multi-layered blocks in an annular shape, with a spacing between adjacent blocks thereof filled with a compression-formed body.

27. (Amended) A compressor including a linear motor, said motor comprising:

- (a) a tubular outer yoke;
- (b) a tubular inner yoke disposed in said outer yoke;
- (c) a coil provided to one of said outer yoke and said inner yoke;
- (d) a permanent magnet located between said outer yoke and said inner yoke and that vibrates in response to a magnetic flux produced by said coil; and
- (e) a vibrator supporting said permanent magnet,
wherein at least one of said outer yoke and said inner yoke is formed by arranging a plurality of multi-layered blocks in an annular shape, with a spacing between adjacent blocks thereof filled with a compression-formed body.--

Kindly add new claim 28 as follows:

B4

--28. (New) A linear motor comprising:
a yoke section comprising a compression-formed and molded body made of metallic
magnetic particles;
a mover vibrating along said yoke section; and
an insulating layer on a surface of said yoke section.--

REMARKS

Claims 18 and 25 have been canceled and new claim 28 has been added. Accordingly, this application now contains claims 1-17, 19-24, and 26-28 for which applicants seek reconsideration.

Amendment

Claims 1-3, 12, 13, 15-17, 19-24, 26, and 27 have been amended to improve their cosmetic, form, and readability, as well as to place claims 3, 12, 23, and 24 (now as new claim 28) in independent form. Applicants submit that none of the changes made to at least claims 1-3, 12, 13, 15, 19-22, 24(28), 26, and 27 are for purposes of narrowing the scope of the claims or overcoming prior art rejection. Rather, changes made to these claims all relate to improving their cosmetic, form, and readability, such as removing superfluous wordings and changing "side face," "bonding face," "metal," etc., to --side--, --surface--, --metallic--, respectively. Claim 19 has been placed in independent form by merely changing the preamble.

Claims 16 and 17 have been amended to further define that the vibrator is made of magnetic material to define over the applied references. Applicants believe that these two are the only claims that have been amended for purposes of adding a narrowing limitation.

No new matter has been introduced.

§ 112 Rejection

Claims 1-17, 19, 26, and 27 were objected to under 35 U.S.C. § 112, second paragraph,

because the feature (d) of these claims was not clearly stated. Although applicants traverse this rejection to the extent that the examiner is requiring a limitation that is unnecessary for patentability and understandability of the present invention, it has been amended to read as --a permanent magnet located between said outer yoke and said inner yoke and that vibrates in response to a magnetic flux produced by said coil--. This clearly states the position of the vibrator in relation to the inner and outer yokes. But the specific direction of the vibration questioned by the examiner has not been claimed as such a limitation is deemed unnecessary for patentability and understandability of the present invention. Applicants submit that this feature fully satisfies the requirements of § 112.

With respect to claim 24, the offending word "divided" has been deleted. Claim 24 further has been amended to depend from claim 23.

Allowable Claims

Claims 3, 12, 13, 23, and 24 (as well as claims 26, and 27 - see the examiner's reasons for allowance) were indicated to be allowable if they are written in independent form, without the informalities noted above. Claims 26 and 27 are already in independent form. Claims 3, 12, and 23 thus have been placed in independent form. The other allowable claims 13 and 24 depend from allowable independent claim 12 and 23, respectively. New independent claim 28 is a combination of original claims 18 and 24. Applicants submit that at least all of these claims are in condition for allowance.

Art Rejection

Claims 1, 2, and 16 were rejected under 35 U.S.C. § 102(b) as anticipated by Bhate (USP 4,349,757). Claims 6-9 were rejected under 35 U.S.C. § 103(a) as unpatentable over Bhate in view of Watanabe (USP 6,222,286). Claims 4, 6, 14, 18-20, and 25 were rejected under § 103(a) as unpatentable over Bhate in view of Aoyama (USP 5,808,381). Finally claims 10, 11, 15, 17,

21, 22, and 25 were rejected under § 103(a) further in view of Negishi (USP 4,700,093), Wang¹ (not identified or furnished), Barbrook (USP 3,993,972), Lee (USP 6,060,810), and Kishi (USP 4,429,240).

Applicants traverse these rejections because none of the applied references, whether taken singly or in combination, would have taught the claimed magnetic vibrator. Specifically, independent claims 1, 15, 16, 17, and 19 all call for a vibrator made of magnetic material supporting a permanent magnet. The vibrator is positioned between the inner and outer yokes.

First, Bhate does not disclose or teach a claimed vibrator located between inner and outer yokes. Rather, Bhate discloses a movable plunger 12 with magnets disposed around its shell 24 and located adjacent to an outer stator 10. Indeed, the examiner refers the plunger 12 itself as an inner yoke. See the rejection pertaining to claims 6-9. If the plunger 12 indeed corresponds to the claimed vibrator, then Bhate would not have disclosed or taught the claimed inner yoke since the inner yoke is an element that is separate from the vibrator. Because Bhate is missing at least one of these claimed elements, Bhate could not have anticipated any of the pending claims within the meaning of § 102.

Second, if Bhat's plunger 12 were deemed to correspond to the claimed vibrator, it would not have taught a vibrator made of a magnetic material.

Third, if Bhat's plunger 12 were deemed to correspond to the claimed inner yoke, it would not have taught the claimed structure because Bhat's permanent magnet would be supported on the inner yoke rather than on the vibrator that is positioned between the inner and outer yokes.

Based on these structural distinctions, applicants submit that Bhate would not have anticipated the present claims.

The obviousness rejection appears to be based on the premise that Bhate would have

¹ No reference bearing the name Wang et al was included with the Office Action. Based on the fact that the examiner relied on this reference for purpose of rejecting only claim 11, which calls for the composition of the vibrator, applicants have assumed that this reference does not teach a magnetic vibrator called for in claim 1. Nonetheless, applicants request the examiner to identify this reference and furnish a copy with the next Office Action.

taught a magnetic vibrator positioned between the inner and outer yokes, with a permanent magnet supported on the magnetic vibrator. As pointed out earlier, that is not the case. Bhate is missing at least one of the structural elements claimed, namely the vibrator or the inner yoke. The combination urged by the examiner does not alleviate or address this shortcoming. Accordingly, the rejections based on the combination of Bhate with other applied references still would not have alleviated the shortcomings noted above.

Specifically, Watanabe teaches a stepping motor instead of a linear motor. Nonetheless, the examiner relied upon this reference for the proposition that it would have been obvious to make Bhate's vibrator from a certain composition taught by Watanabe. As previously explained, Bhate does not have a vibrator. Accordingly, there would not have been any motivation for Bhate to include one. Simply, there would not have been any tenable motivation for the combination urged by the examiner. Moreover, even if Bhate's plunger 12 were to be composed of the material taught by Watanabe, the combination still would not have alleviated the shortcomings noted above, namely the inner yoke supporting the magnet or missing the inner yoke.

Lee was relied upon for the proposition that a linear motor can be used as a linear compressor. The examiner, however, does not address Bhate's shortcomings identified above. While Lee uses an adjective "magnetic" to modify "paddle 50" (see Columns 1-2), it does not disclose that the paddle 50 itself is magnetic. There is no disclosure anywhere as to why it would be desirable for the paddle 50 itself to be magnetic. It is believed that the prior art disclosed in Lee is similar to the prior art shown in Fig. 19 of the present drawings, where the paddle or the vibrator itself is not made of magnetic material.

The other references, namely Aoyama, Negishi, and Kishi, similarly fail to alleviate Bhate's shortcomings noted above with respect to a magnetic vibrator.

Conclusion

Applicants submit that all of the pending claims patentably distinguish over the applied references within the meaning of § 102 and § 103, and thus urge the examiner to issue an early Notice of Allowance. Should the examiner have any issues concerning this reply or any other outstanding issues remaining in this application, applicants urge the examiner to contact the undersigned.

Claim Fee

Applicants previously paid the claim fee in this application for a total of 27 claims, including 8 independent claims. After entry of the present Amendment, this application will contain a total of 26 claims, including 11 independent claims. The present Amendment thus introduces **THREE** additional independent claims that require a fee of \$252 (\$84 x 3). The Commissioner is authorized to charge \$252 (or any additional fees required to maintain the pendency of this application) to Deposit Account No. 18-2056.

Respectfully submitted,

Date: July 9, 2002



Marc A. Rossi
Registration No. 31,923

ROSSI & ASSOCIATES
P.O. Box 826
Ashburn, VA 20146-0826
Phone: 703-726-6020